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THE DESIGN OF REFLECTION

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Abstract

This paper is about reflection. The authors investigated reflection in the context of formal written project journals. Seven groups of Masters students were asked to keep journals while they worked on projects in industry. On completion of each series of projects, they commented on the suitability of the journal design as far as reflection was concerned and modifications, based on their comments, were made. It is our argument that the design of journals for reflection is sensitive to design issues such as the intended audience, assessment, asynchronous reflection, putting concerns into writing and reflecting against a concern.

Keywords: Reflection, reflective learning, journals, project definition

Introduction

The object under study in this research is reflection. Using the premise that reflection is best done against written records, the authors' concern is the design of journals for understanding reflection in the context of information systems (IS) projects. In particular, this research will explore the argument that project journals need to be carefully designed if effective reflection is to occur. This raises research questions such as what is reflection, what is the role of journals in reflection, how should journals be used, how should they be designed to help with reflection?

In recent times, John Dewey, in his book, *How We Think*, brought attention back to the importance of reflection defining it as "active, persistent and careful consideration of any belief or supposed form of knowledge in the lights of the grounds that support it and the further conclusions to which it tends." (Dewey, 1997, p6). In this research, the view of reflection is considered using the time separations introduced by Schon (1995); 'reflection-in-action', where implicit assumptions are considered and alternatives are evaluated while actions are being undertaken and 'reflection-on-action' – a retrospective process where actions that have been taken are reviewed, the effects of those actions observed and consequences journaled.

Honey and Mumford (1989) describe a journal as a form of diary in which the author documents, analyses and reflects on a concern or activity relating to a project. Several writers, such as Moon (1999), Holly (1984) and Kerka (1996), while describing various types of journals, concentrate on 'learning' or 'reflective' journals which are described as more complex than diaries or logs in that they combine writing about an experience and then reflecting on the experience. This research focuses on this type of journal.

Motivation for the Study

There is an increasing interest in research and project management methods that involve reflection (Keating et al, 1996; Barclay, 1996). Action research, participatory observation and some forms of grounded theory suggest appreciation of the problem domain by reflecting on it at some later point in time. However, there is little discussion on how this might be designed. Given the power of journals to assist in this asynchronous communication with oneself, the exact design of these project journals and how they are used seem worthy of research.

The first author has been program director of a program in which students undertake a series of industry-based projects, ranging from 8 to 18 weeks. In the majority of projects, the project definition has needed careful communication between the client and student and has often changed significantly during the life of the project. Students have difficulty gaining clear definitions and coping with this scope change so this was thought a complex and dynamic enough situation for them to develop reflective skills. The purpose of this reflection was to evoke learning about project definition across projects (meta learning). Following research by Barclay (1996) on personnel professionals, the authors were drawn to the idea that students (and therefore practitioners) would benefit from regularly recording and analysing issues or concerns in purposefully designed journals. These could then be used to undertake and think about reflection. (see Schon, 1995 and Hackett, 2001).

Reflection

The definition of reflection is problematic – it can mean revisiting an experience, turning something back on itself (reflexion) or meditation. This paper is about revisiting – thinking about actions that have been taken.

Boud et al (1994 b) remind us that the concept and advisability of reflection goes back at least as far as Socrates' time. Dewey (1901, reprinted 1997) brought it back into focus and since then it has been endorsed as an advisable learning method in both education institutions and industry by many researchers (Schon, 1995; Hackett, 2001; Boud et al, 1987 a & b; Mathiassen & Sandeep, 2002; Keating et al, 1996; Raelin, 2001). In the educational environment, 'situated learning', where learning occurs as a product of activities in an industry context, is suggested by researchers such as Lave (2002) and Mathiassen & Sandeep (2002) to be the ideal form of learning because of the opportunity for students to reflect on their activities. It is being suggested here that this can be improved by carefully designed journals.

Boud et al (1994 a) assert that, "Reflection is an important activity in which people recapture their experience, think about it, mull over it and evaluate it" (p19). They see the act of capturing thoughts and actions at the time they occur for later asynchronous reflection as a necessary factor in gaining new knowledge and understanding from experiences.

Dewey (1997 [1901]) describes four types of thinking ranging from random thought to the reflective thought where there is a continual learning loop between the thought and reflection on that thought. Dewey believes the creation of knowledge is dependent on the extent to which a belief is challenged. Justified knowledge is where one had a belief (built on evidence otherwise it is simply a random thought), doubt and uncertainty about that belief occurs, then one reflects, searching for evidence and looking for relationships and/or connections that may substantiate or invalidate that belief. "To maintain the state of doubt and to carry on systematic and protracted inquiry – these are the essentials of thinking." (Dewey, 1997, p13). The reflection process may need to be designed around these ideas.

Many recent researchers (Hackett, 2001; Jarvinen & Poikela, 2001; Mathiassen & Sandeep, 2002) adopt Schon's labels for reflection and time, 'reflection-in-action' and 'reflection-on-action'. Schon (1995), whose work is mainly based on practitioners, explains that much of our 'knowing' is tacit and that we act instinctively – he calls this 'knowing-in-action'. It is only when something unusual or complex comes about that we question our actions, reflecting on our understandings and assumptions and evaluate alternative actions. This reflection takes place during the action when a change of plan can be instituted to alter the situation. Jarvinen & Poikela (2001) point out that "reflection-in-action is based on the actor's own observations and can thus be influenced only through his or her own action."

'Reflection-on-action' is done retrospectively by revisiting an action, often being emotionally removed from the event so that it is possible to take into account the actor's and other's feelings at the time of the action and understandings and learning that has taken place since the action. In this way, the experience is re-evaluated at a later point in time. Journals aid in this reflection in that the initial action is recorded, revisited and the reflection is then noted.

One of the advantages of written communication is that it can be standardised and shared with a wider range of people. However, this sharing can cause problems. Some researchers suggest that knowledge may be lost unless reflection is shared amongst the group or peers (Mathiassen & Sandeep, 2002; Ayas & Zeniuk, 2001, Raelin, 2001). Having the facility to share reflective knowledge is thought particularly relevant to journal design.

Journals for Reflection

Reflective (or learning) journals are used in education and industry as a method to promote deep rather than surface learning (Hogan, 1995; Barclay, 1996; Walker, 1994; Haig, 2001; Holly, 1984). Holly (1984) advises that writing reflective journals

should be seen as “a cyclical pattern of reflection”. First, reflecting on an action through the act of writing then, later, reviewing and reflecting on that action that may require further writing and reflection etc. Moon (1999) cautions that, unless the writer considers additional ideas or alternative actions that might have been performed when writing, there will be no progression beyond the initial action – there will be no reflective learning.

When writing journals, the question of the audience (those for whom the journal is being written) can be problematic (Hogan, 1995; Moon, 1999; Kerka, 1996). Hogan and Kerka express concern that, if their work is to be read by others including supervisors, the reflection may be inhibited. Assessment from an outsider (supervisor) seems to put at risk the notion of honestly recording one’s own real actions and thoughts thus altering the learning from those actions.

A review of the literature has highlighted the issues tabled below that the authors believe to be relevant to the design of reflective journal. These will be investigated and discussed to gain insight into the journal design best suited to reflection.

<i>Issues</i>	<i>Discussion</i>	<i>Supporting reference</i>
Audience	Does knowing someone (a supervisor) will read the journal affect the entries? Can one reflect honestly when another will read entries? Does making the journals public via the web inhibit reflection?	Hogan 1995, Moon 1999, Kerka 1996, Mathiassen & Sandeep 2002, Ayas & Zeniuk 2001, Taylor 1997
Assessment	What influence does assessment have on journal entries?	Hogan 1995, Haig 2001
Asynchronous reflection	When should entries be made (immediately after event or after a time lapse)? How long after event should actions be reflected upon?	Boud et al 1994, Raelin 2001,
Put into writing	Does putting thoughts into writing have benefits?	Ong 1982
Reflecting against concern	What is the optimum solution for this situation?	Argyris & Schon 1993

Method(ology)

The guarantors that this interpretive research will make a contribution to knowledge, i.e. produce justified knowledge (Churchman, 1971), include that rational reasoning is being used, the journals and respondents’ comments are being recorded so others can observe them, the research is being written in a reasoned argument where the authors have to justify their argument to the reader and respondents are asked to justify their responses to the researcher. Further, the authors are being very explicit about their perspective. Journal design is being researched in the context of learning about reflection.

In line with Baskerville and Wood-Harper’s (1996) assertion that action research is “regarded by many as the ideal post-positivist social scientific research method for IS research”, this research uses observer participation, argumentative inquiry, involves intervention and primarily is aimed at insight-gathering (theory or perspective building) rather than collecting exact measurements. The authors have been and will be interpreting the effect of design of journals keeping relative to their up-front intellectual frame of reflective journal design (Alvesson and Skoldberg, 2000; Avison and Myers, 2000).

This research uses information gathered from 1998 to 2002 through a series of projects while the first author was course coordinator. Throughout that period she supervised 7 series of projects; 4 were done in groups and carried out for periods of 8 weeks each, 3 lasted 18 weeks and were done individually. There were 30 students some of whom participated in more than one project.

As mentioned earlier, students found it very hard to cope with changes in project scope that occurred throughout the life of the project. To help students manage this problem, the authors asked the students to keep journals to document and reflect on their concerns about project definition and actions taken to address those concerns throughout the projects.

Design Variations

In line with the tradition of action research, throughout each series of projects, the authors observed the reflection documented by students, comments of the journal design were requested on completion of the projects and modifications were made to in an attempt to improve the reflection process. The following table summarises the thinking behind the modifications made to the journal design.

Table 1 – Modifications to Design

<i>Series</i>	<i>Period</i>	<i>Design</i>	<i>Reason for Modification</i>
1	Dec 1999 – Feb 2000	Weekly freeform email entries discussing concerns about the project	
2	Dec 2000 – Feb 2001	As above	
3	Aug 2001 – Dec 2001	Journal entries made under headings: <ul style="list-style-type: none"> • Student's concern • Client's concern (industry project owner) • Action and reason for action 	Students were writing about concerns but confining the discussion to their concern and action – no analysis was taking place and the discussion was all from their own perspective. Changes were made to provide guidance for student to: <ul style="list-style-type: none"> • view the project from the project owner's perspective • analyse their own actions
4	Dec 2001 – Feb 2002	As above but addition of heading for reflection on actions taken	Student had begun to analyse their experiences and that they perceived were the project owners. The authors introduced this extra column to encourage students to recognise that theirs or the owner's perspective or concern was usually the 'ideal' against which to reflect
5	Feb 2002 – June 2002	As above	
6	Aug 2002 – Dec 2002	Software provided to enable journal entries to be published to web. Entries to be made in two windows: 1 st window headings <ul style="list-style-type: none"> • Project description • Client's concern • Conclusion of report • Summary of evidence (to support findings in report) • 2nd window headings • Student's concern • Action taken • Review (reflection) of actions 	Literature suggests that knowledge is lost unless reflections are shared. The software was introduced to allow students to share their experiences and reflections with their peers so they could learn from each other.
7	Dec 2002 – Feb 2003	As above	

Interim Findings

Remembering the purpose of this research is to gain insight into reflection, the first step the authors have taken is to analyse the students' impressions on the effectiveness of the design of the journals to aid this reflection. At this stage of the research, the feedback gained from email, electronic meeting systems and interviews has been studied. The content of the journals themselves will be examined in the next stage. A summary of the discussions with students follows:

Audience

Students were always aware of the audience - quite often limiting entries to issues they thought the reader would be interested in.

- When the reader was to be the course coordinator only, some admitted they didn't want to discuss problems because it may make them look incompetent and they would want to use her as a referee for employment applications.
- When the audience was their peers, a number of students said they turned it into a "bragging session".
- A finding that interested the authors was that, although choice of event reported was often influenced by the intended audience, audience appeared to have no effect on the student's reflection.

Assessment

Assessment of the journals had a major effect on the effort put into entries and reflection. There was general agreement that, if there were to be no assessment, the journals would not be done. If assessed, the effort put into entries and reflection would be in direct proportion to the marks allocated to the task.

Asynchronous Reflection

While the majority of students made their journal entries at the end of each week, one student commented that she found that to report the concern as it really was, it imperative to make her journal entry immediately while the emotions were still high. If it were left too long, rather than reporting the concern, reflection may already have occurred and the memory of the actual may have become distorted.

Students would normally reflect on their actions after about a week had elapsed. A minority of students revisited the concern when the consequences of their actions were clear. A redesign of the web based systems that would encourage iterative reflection was suggested by one student.

Writing

Opinions varied concerning the benefits of putting thoughts into writing. Some students were adamant there was no need – they could always remember accurately their concerns and analysis of their consequent activities. Others, however, believed there were obvious benefits ranging from being therapeutic to helping with the analysis of their reactions to concerns.

Reflection Against Concern

When reflection takes place, it needs to be done against a concern (Argyris & Schon, 1993). In the case of the students' journals, the original student's and client's concern was recorded and action taken against this concern. When reflecting, both the action and concern need to be examined (see diagram below). Reflection may show that:

- The action taken was appropriate and the concern was correct.
- The action taken was inappropriate and the concern was correct.
- The concern was ill founded and the action may or may not have worked. In cases such as these, a new concern may be identified.

Learning takes place by looking back to evaluate the actions and concerns when the consequences of the actions are known.

Conclusion

The expected contribution to knowledge from this research was to be a better understanding of reflection through the use of journals. The design of the journals has been modified in an attempt to find that most appropriate for reflection. It is hoped that the insight gained from the students' experiences could be equally applied to industry practitioners. A limitation of this research

is that the participants are students who are sometimes apathetic about improving their reflection and commenting on journal design that may contribute to reflection.

The authors have had difficulty in finding literature advising the optimum time between actions and reflection. We see this as an area we wish to research further.

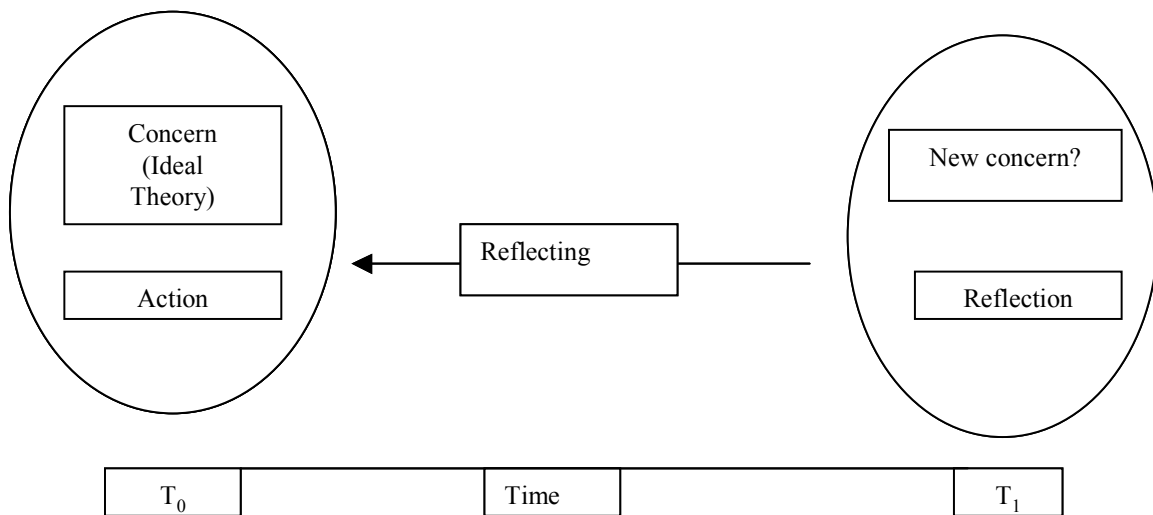


Figure 1. Reflecting Against Concern

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